

# Akershus University Hospital optimizes the use of CT examinations

## Capgemini and IBM Watson transform the way CT scan information is analyzed

Akershus University Hospital provides health care to approximately 500,000 inhabitants around Oslo. The hospital's main tasks are patient care, research, and both patient and medical staff education. The hospital also provides health care and services within the areas of mental health and substance abuse.

### Challenge

The hospital's image diagnostic department wanted to improve the use of CT examinations in emergencies. CT scans can be life-saving in critical circumstances, but the radiation can also be potentially harmful. It is important for the hospital to prevent overuse of scans. Akershus University Hospital wanted to make sure of that the number of CT examinations conducted would be in balance with the probability of positive gains in relation to the potential harmful effects.

### Overview

**Customer:** Akershus University Hospital

**Industry:** Medicine

**Location:** Norway

**Client Challenges/Business Need:** Optimize the use of CT examinations

**Solution-at-a-glance:** IBM Watson technology

#### Results:

- IBM Watson trained to understand Norwegian and medical terminology
- Improved analytical capability for CT scanning data
- Better patient care in critical circumstances

 We have enormous amount of information stored in our patient data. Since it is written in an unstructured text format, until now it has not been accessible for analytics or quality assurance.

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## Solution

The starting point was to identify and utilize the opportunities that new technology, such as IBM Watson Explorer, can provide in terms of further treatment suggestions, patient safety and improvement, and learning in health care, based on reviews and experiences that are embodied in electronic medical journals.

After discussion with Capgemini, the goal of the project was to find out how often CT scans of children are undertaken during emergency situations, then identify the amount of findings within each patient category. The information appears in text format and there is no other way to obtain this information. In order to analyze these large amounts of data, Capgemini and Akershus University Hospital decided to carry out an analysis project with the help of IBM Watson technology. By using IBM Watson Explorer, Capgemini would collect information from the radiology reports that are part of the patient journal. This would be performed through a combination of machine-learning and advanced techniques of natural language processing.

It was decided that Capgemini would adapt the technology to the Norwegian language, and Akershus University Hospital would contribute to the project by training Watson to understand medical words and phrases. In this project, more than 5,000 anonymous CT-examinations would form the unstructured data being analyzed. The alternative would have been a manual analysis of a limited amount of random selection patients.

The project was prepared, scaled and implemented over a period of seven weeks during the summer 2016. Akershus University Hospital was responsible for the medical competence and clinical ICT technical expertise, while Capgemini was responsible for the IBM Watson implementation and the overall project management tasks.

## Results

The initial findings confirmed that the hospital's CT scanning of children was justified with the benefits outweighing any potential negative effects. Vital medical information, previously not available for such detailed analysis, can now be used for quality assurance and optimization of indications and procedures for CT-scanning in critical situations.

The hospital and their image diagnostic department are now better positioned to serve the needs of their patients.

### The Collaborative Approach:

The Collaborative Business Experience is central to the Capgemini philosophy and a pillar of their service delivery.

Thanks to close collaboration between clinical expertise from Akershus University Hospital and consultants from Capgemini, IBM Watson was trained to read and extract data from radiology reports. This required strong communication skills and close interaction between medical - and IT experts.

## About Capgemini

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## About Akershus University Hospital

Akershus University Hospital (Ahus) is the largest emergency care hospital in Norway. It delivers health care to approximately 500 000 inhabitants in the eastern part of the outer Oslo area.

The hospital's main tasks are patient care, research, teaching and patient- and family education. Ahus provide services in the area of somatic and psychiatric care as well as drug rehabilitation.

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